PROGRESS in 1968

FOREST SERVICE California Region 5

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A CHALLENGING YEAR IN CONSERVATION — 1968

This was a year of progress in the management of forest lands in California. It was also a year of . . .

Challenge to manage each resource within its sustained yield capability . . .

Challenge to correlate the use of each resource with that of others so that the total goods and services produced would be at an optimum level . . .

Challenge to see that the "mix" of products and services would best meet the needs of a growing population . . .

Challenge to protect these resources from fire, flood, insects, and other destructive agents . . .

Challenge to the Forest Service to share in the solution of America's urban as well as rural economic and social problems.

This report indicates the degree to which we may have met these challenges. We look toward the opportunity for greater progress in the years ahead.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
CALIFORNIA REGION
630 SANSOME STREET
SAN FRANCISCO, CALIFORNIA 94111

Dear Friends:

I am pleased to bring you this statement on highlights of 1968 in the California Region of the Forest Service, U. S. Department of Agriculture. Significant progress was made on many projects in the seventeen National Forests in California.

The Nation's growing population requires more and more products and services from the same land base. This results in increased pressures on our natural resources and emphasizes the need for sound resource planning to satisfy both the present and future needs of our society – from wilderness and recreation facilities to wood and minerals. Since early 1968 we have been reviewing and sharpening up the multiple use plans for each of 94 Ranger Districts in California. This five-year adjustment is to be sure they conform to present and identifiable future needs. One of the steps in this effort is to invite greater public involvement in land management planning decisions. We are seeking the widest possible expression of public opinion as well as a broad factual information base upon which to make long-term decisions. We expect to develop better plans by reviewing them with interested citizens at public meetings, in county planning groups, and with elected officials.

I also want to briefly mention an occurrence of considerable importance which had its inception in 1968 and its culmination in early 1969. It points dramatically to the need for improving the prevention and control of forest fires. After the 1968 forest fires in southern California, floods came to the same areas early in the new year. A tragic loss of life and property resulted from flood waters and mud flowing from denuded hillsides. For many years the Forest Service has been concerned about this potential danger – the sequence of fire, then flood. In order to do everything possible to avoid this type of occurrence in the future, fire control facilities, fuelbreaks, fire stations, specialized and trained firefighters, modern equipment, and access roads must be made available. Moreover, flood protection devices, such as upstream structures for flood control, must be readied.

I haven't attempted to report on all the many activities and accomplishments. On the following pages are samples of the work in progress during 1968. For additional information on these activities – or any phase of the Forest Service job – please contact your Ranger, the Supervisors of the National Forests, or the Regional Office in San Francisco.

J. W. Deinema

J. W. DEINEMA
Regional Forester

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STUDY PREDICTS STREAMFLOW INCREASE AND SEDIMENT REDUCTION

To determine the potential for increasing water yields and reducing sediment from National Forest lands in California, the Forest Service is completing a broad survey and analysis of lands tributary to water-short areas. This is Phase I of the Pacific Southwest Hydrologic Survey. Areas of the Colorado River, the Central Valley, and south coastal California will benefit from this project.

Survey results are being reported by hydrologic subprovinces — large drainages that are generally comparable in water-yielding characteristics. One such area is the Pit-Almanor Hydrologic Subprovince. It comprises portions of the Modoc, Lassen, and Shasta-Trinity National Forests, and is drained by the Pit River and Lake Almanor tributaries. Excluding wildernesses, it contains 1,457,000 acres of National Forest land.

With scientifically prescribed treatment, this area could provide about 26,000 acre feet of additional water each year. Eighty percent of this water increase would come from the pine, pinyon-juniper, and brush vegetation types.

In the pine type, the increase could result from modification of timber harvesting methods to provide for greater accumulation of snow and soil moisture.

In the pinyon-juniper and brush types, the prescribed watershed treatment would call for converting 70 percent of this area to grass, which removes less moisture from the soil.

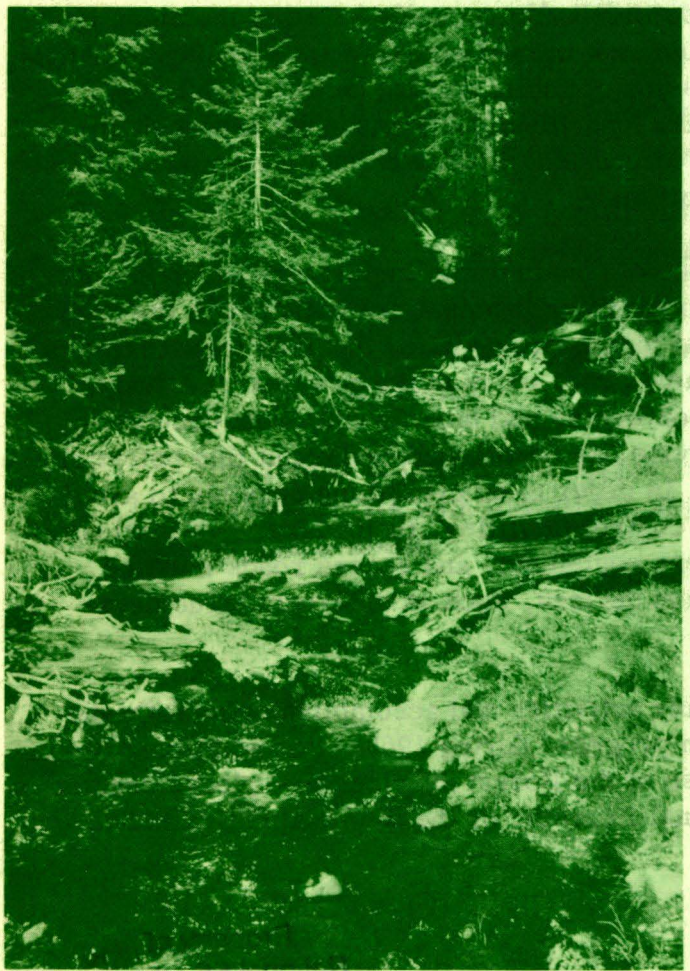
With a watershed treatment program designed for sediment reduction, sedimentation can be reduced by about 205,000 tons each year in the Pit-Almanor Hydrologic Subprovince. The magnitude of sediment reduction possible from primary sources is approximately as follows:

Source of Erosion	Percent Reduction in Sedimentation
Sheet	15
Stream Channel	30
Road	55

All methods of erosion-sediment control would be employed to bring about this reduction, including permanent structures to control gullies and to drain roads.

The California Region has started Phase II of the Pacific Southwest Survey. This phase will be an intensive study of the water yields of two watersheds — a timbered watershed in the Central Sierras and a chaparral-covered watershed in southern California.

The objective of the Phase II study is to provide data to design a multiple use management plan, based on least-cost alternatives, which will increase water yields and reduce sedimentation. The Morena Watershed on the Cleveland National Forest and the Slate Creek - Canyon Creek Watershed on the Plumas and Tahoe National Forests are the two planned for study, to be completed in 1971.



With timber harvesting designed to increase water yield, as well as to sustain timber growth, this stream in the Warner Mounains could produce 20 percent more water.

SOIL RESOURCE STUDIES PROVE BASIC TO GOOD LAND MANAGEMENT

Through progressive, detailed soil surveys and soil management services, Forest Service soil scientists are furnishing basic data about the soil resource — vital for sound land management. The objective is to recognize various soil characteristics and qualities which determine if an area of land is suitable for a particular management practice.

These studies, completed on some 3,500,000 acres throughout the Forests in the Region, supply information needed for road locations, timber sales, tree planting sites, vegetation type conversion, recreation sites, wilderness proposals, and hydrologic analysis.

The examinations identify soil horizons and their texture, structure, clay films, infiltration, and permeability. Also evaluated are resistance of surface soil aggregates to dispersion, erosion hazard ratings, landscape stability, and water holding capacity. Important interpretations and predictions are made from these soil characteristics and qualities as an aid in planning various management programs.

A small landslide shows this to be a very unstable hillside, but in many locations a soil survey is necessary to indicate this potential.

STREAM VIEWING CHAMBER IS GREAT VISITOR ATTRACTION

Even before completion, the unique Rainbow Pool stream viewing chamber in the Eldorado National Forest proved to be a big hit with visitors to this area of the Lake Tahoe Visitor Center. Located on Taylor Creek, the structure is designed to reveal the fascinating story of nature occurring beneath the surface of a rushing mountain stream. Visitors will watch fish and other aquatic life in their native habitat.

The chamber itself, built half under and half above the ground, is entered by way of a descending ramp. The interior is dark, but softly illuminated by light filtering through a 33-foot panorama of windows extending the length of one wall.

The stream bed is displayed in three parts. At the upper end of the structure, where water enters, are rapids where insects breed, and rainbow trout fry can be seen looking for food.

Farther downstream is a spawning area where fish lay their eggs, and beyond is the wider pool where fish of many sizes and species swim.

Associated displays within the chamber tell about life in the stream about the surrounding watershed.

The Rainbow Pool will open the first of June. It is located on the southwest shore of Lake Tahoe, one-half mile beyond Camp Richardson on Highway 89.

Rainbow Pool — a branch of Taylor Creek — flows by the windows of the viewing chamber. Above is the view from inside.

MINERAL KING MASTER PLAN APPROVED

The master development plan of Walt Disney Productions, Inc. for the Mineral King Public Recreation Area has been approved by the Forest Service. The planned all-year recreational project, located 55 miles east of Visalia, California, is in the Sequoia National Forest. The Walt Disney organization has spent the last three years in studies and analysis on the recreation complex which will provide skiing, indoor and outdoor ice skating, and general snow play. In summertime, activities will include scenic enjoyment, fishing, picnicking, sightseeing, nature trails, an equestrian center, and conservation education.

Approval of the development programs and plans completes one of three requirements to the issuance of a long-term permit for development and land use. The other two relate to contracting for the initial portion of the access road, and programming its completion within five years. The California Highway Commission has designated the road as a high standard two-lane scenic highway without threat or damage to any sequoia trees. The initial contract work is expected to be awarded this summer.

The master plan outlines the initial facilities to be completed in 1973 as well as development scheduled until 1978.

Maintaining the valley's superb esthetic qualities, while at the same time properly providing conveniences and services for the public, posed a series of interesting challenges. The original idea of an Alpine Village, without amusement park aspects and from which automobiles are totally excluded, continued as the heart of the planning concept for Mineral King. The Village will be reached by cog-assist railway from a roadhead farther down the valley, where sub-level parking will be planned to minimize scenic disturbance. Chair and gondola lifts will extend into mountain areas from both the village and the roadend.

Initial improvements will accommodate 1,505 overnight guests, plus day visitors, when the project opens to the general public in winter, 1973, upon completion of an appropriate all-weather access road by the State of California.

Detailed plans for each of the facilities will constitute the next step in development. Final plans will bring refinements and improvements in the master plan itself.

A focal point in the master plan for the development of Mineral King is this completely contained village, nestled in an alpine setting. Illustration: Walt Disney Productions.

SUCCESSFUL YEAR IN MANAGEMENT OF TIMBER RESOURCE

The planting of 35,575 acres of forest land this year set a new regional record, and exceeded last year's total by over 9,000 acres. In the Klamath National Forest alone, over 9,200 acres were planted.

In summary, the acres of land planted and treated is shown below:

	1967	1968
Planting	26,412	35,575
Seeding	540	2,674
Natural regeneration on prepared sites	192	618
Site preparation	21,962	20,957
Release	15,702	11,514
Precommercial thinning	15,720	16,024
Pruning	1,031	1,216

In the Tree Improvement Program, there are two new fertilizer studies now going on, and an older one which is of interest. The two current studies are at the Badger Hill Breeding Orchard in sugar pine grafts, and at the Placerville Nursery in ponderosa pine grafts. The ponderosa study is under the direction of the Pacific Southwest Forest and Range Experiment Station and the sugar pine study is under the direction of the Forest Service Regional Office.

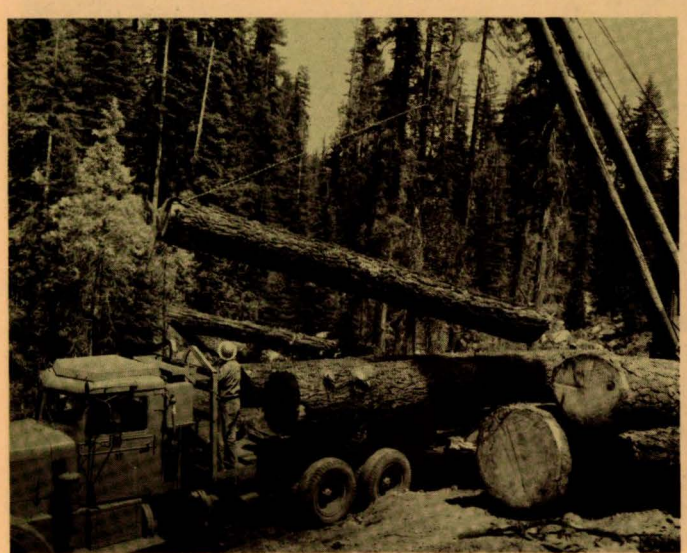
The sugar pine fertilizer study at Badger Hill, in the Eldorado National Forest, is being conducted on grafts of rust-resistant sugar pine trees. Its purpose is to find out if fertilizing will increase seed development. The first fertilizing was done in April 1967.

The ponderosa pine fertilizer study at the Placerville Nursery is being conducted on grafts of superior ponderosa pine selections. Its purpose is to find out if fertilizers will increase growth of ponderosa pine grafts. This study was started in July 1968.

The older fertilizer study was conducted at the Cal Mountain Seed Production Area, Lassen National Forest, to find out if fertilizers will increase seed production. The fertilizer was applied in 1960, 1962, 1963, and 1964. This study encompasses some 2,500 trees of sizes from 8 to 28 inches d.b.h. Seed will be collected this next year to determine the results.

In an additional experiment, cross breeding of superior and rust-resistant sugar pine was started, using pollen from proven rust-resistant trees. Two additional rust-resistant trees were found to have the ability to transmit this characteristic to their offspring, and 2,000 additional rust-resisting seedlings were planted in test sites.

Two ponderosa pine seed orchards were established on three acres at the Placerville Nursery, Eldorado National Forest, and on 17 acres at Foresthill, Tahoe National Forest. The orchards will become a source of genetically improved seed for reforestation in the National Forests.



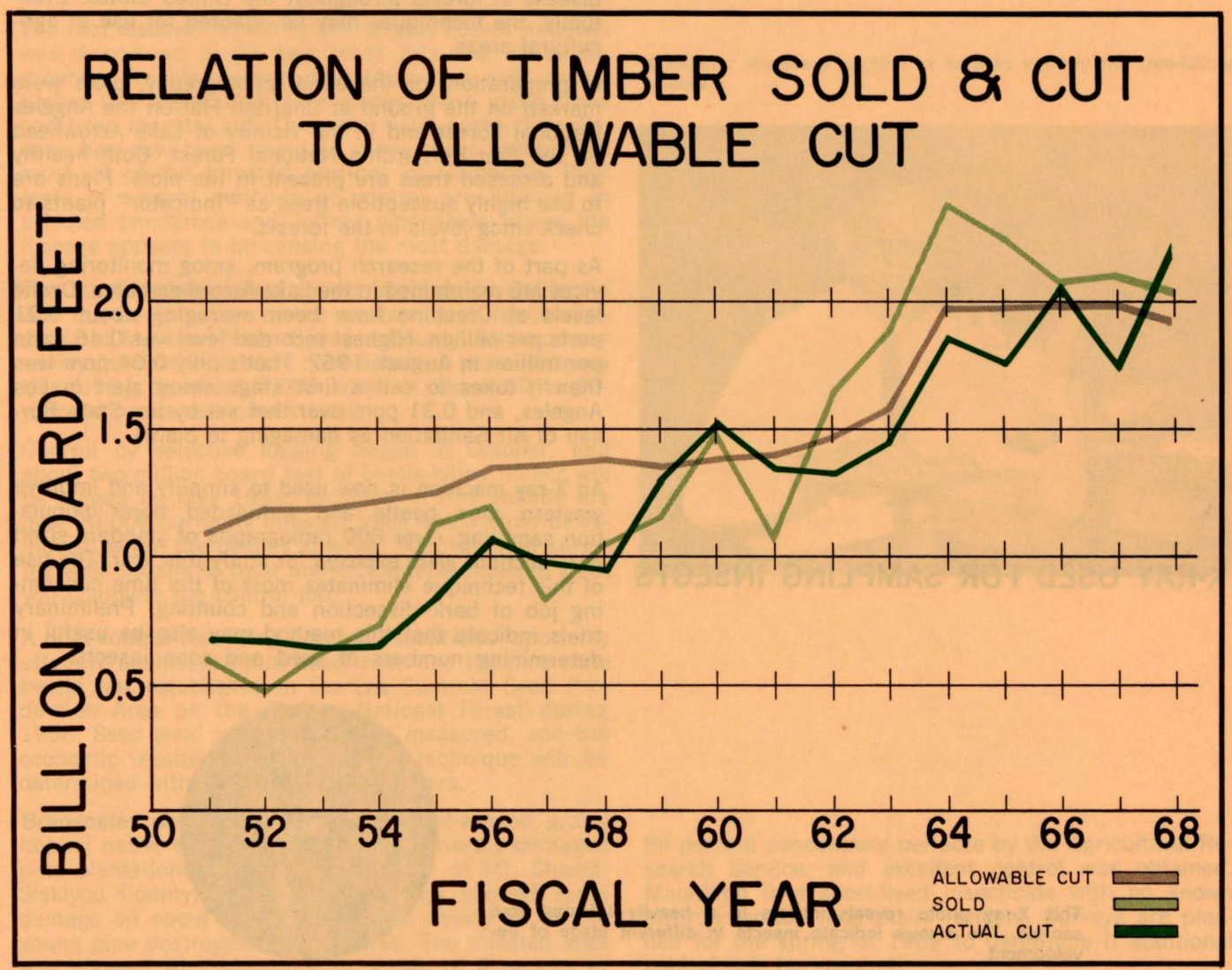
Under sustained yield management, the growth of new timber equals — or exceeds — that cut.

RECORD TIMBER HARVEST

Over 2.23 billion board feet of timber from California's National Forests helped fill the needs of the State and the Nation this year for timber products. This compares to 2.03 billion feet in 1967.

To modernize methods of timber scaling, records and related bookkeeping and billings are being modified for automated data processing methods. By July, the Shasta-Trinity National Forests were completely automated. They were followed by the Klamath and Six Rivers Forests.

The first regular skyline logging sale for this Region was made on the Plumas National Forest in August, and other sales are planned for the near future. By means of skyline logging, areas of commercial timber can be logged that otherwise could not because of sensitive soils subject to erosion, steepness of terrain, problems of road construction, and for other reasons. It is anticipated that the number of sales to be made will encourage loggers to invest in the specialized equipment needed.



SMOG-DAMAGED TREES STUDIED

Smog study, part of a larger program by the Forest Service under a grant from the U.S. Public Health Service, is being carried out to determine the extent of damage to conifer forests by smog in California. The study, conducted by the Pacific Southwest Experiment Station, will show the severity of the damage, and the location of susceptible as well as resistant trees.

Smog destroys the chlorophyll in the leaf tissue and speeds up the aging process, producing a "chlorotic decline." Trees gradually lose their vigor, and the needles turn yellow and fall. Some 25,000 acres of forest are now affected. Ponderosa pine trees in the San Bernardino Mountains have been dying from the effects of smog for 15 years, but the cause was not known until 1962, when laboratory trials produced the disease by fumigating trees with ozone.

A 1966 survey of plots from Crestline to Cedar Gulch on the San Bernardino Forest indicated that 59 percent of the trees were in an intermediate or advanced stage of decline. In a weakened condition trees are also prey to forest insects, especially bark beetles.

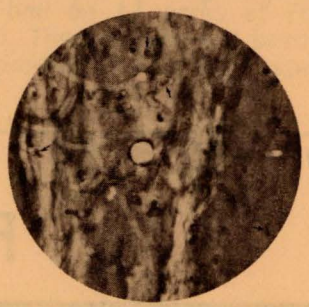
If satisfactory aerial photographic techniques can be developed, they will be used to survey and map smog disease in forests throughout the United States. Eventually, the techniques may be adapted for use in agricultural areas.

In preparation for the aerial photography, plots were marked on the ground at Charlton Flat on the Angeles National Forest and in the vicinity of Lake Arrowhead on the San Bernardino National Forest. Both healthy and diseased trees are present in the plots. Plans are to use highly susceptible trees as "indicator" plants to check smog levels in the forests.

As part of the research program, smog monitoring devices are maintained in the Lake Arrowhead area. Ozone levels at Crestline have been averaging about 0.21 parts per million. Highest recorded level was 0.46 parts per million in August, 1967. That's only 0.04 ppm less than it takes to call a first stage smog alert in Los Angeles, and 0.31 ppm over that set by the State Bureau of Air Sanitation as damaging to plants.

X-RAY USED FOR SAMPLING INSECTS

An X-ray machine is now used to simplify and improve western pine beetle and flatheaded borer population sampling. Over 600 radiographs of standard-sized bark sections were exposed for study this year. The use of this technique eliminates most of the time consuming job of bark dissection and counting. Preliminary trials indicate that this method may also be useful in determining numbers of seed and cone insects.



This X-ray photo reveals insects in a heavily infested tree sample. The arrows indicate insects in different stage of development.

White pine blister rust is widely distributed on the Plumas, Tahoe, Eldorado and other more northern National Forests; it occurs in most stream bottoms supporting sugar pine, and at higher elevations in many locations.

This destructive disease was found for the first time at a number of locations in the Mountain Home State Forest and in the Sequoia National Forest. In the one large infection center of 300 to 400 acres on the Mountain Home State Forest infected pines were found on the upland and ridgetops as well as in the stream bottoms.

The discovery of infected trees on a tributary of Deep Creek in the Sequoia National Forest establishes the new known southern limit of the disease in California. This is about 175 airline miles south of the previously known infected area near Dodge Ridge on the Stanislaus National Forest.

Eradication of gooseberry and currant bushes (alternate hosts for the rust pathogen causing this disease) is not considered feasible in the southern Sierra Nevada areas. Therefore direct control by cutting and pruning infected trees will be done wherever possible.

The root disease caused by the fungus Fomes annosus was discovered in 65 new areas this year in campgrounds, thinning areas, Christmas tree sale areas, timber sale areas, and other places where green trees had been recently cut. This potentially destructive disease has now been found in many areas throughout most all of the forested portions of California. Pilot tests of several methods of control are planned in selected ponderosa and Jeffrey pine areas where the disease appears to be causing the most damage.

The most serious forest insect problem in California was the continuation of the western pine beetle epidemic at McCloud Flats, Siskiyou County. Mid-summer surveys showed that there have been two years of heavy tree killing on about 7,000 acres of dense 60 to 80-year-old ponderosa pine stands.

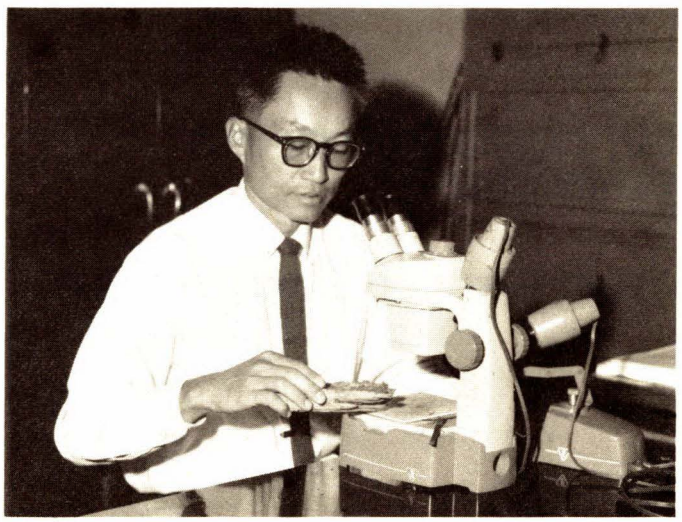
Control by selective logging began in October, and about two million board feet of beetle-killed timber will be logged by May 1969. Included in this volume are over 10,000 currently infested trees which must be removed before the beetles emerge. Supplemental spraying with lindane to treat unmerchantable infested trees will complete the control job.

A pilot control test using several insecticides reportedly effective against the pine seed moth and the pine cone beetle was established in the Lee Summitt Seed Production Area on the Plumas National Forest during 1968. Seed yield increases will be measured, and the economic feasibility of this control technique will be determined within the next several years.

Bradynotes obesa, a little known short-winged grasshopper native to northern California, severely damaged pine plantations on the western slope of Mt. Shasta, Siskiyou County, during June. Surveys showed some damage on about 4,200 acres, with nearly all of the young pine destroyed on 800 acres. The infested area was sprayed with Malathion at a rate of 8 ounces of 95 percent concentrate per acre by the Agricultural Research Service, and excellent control was obtained. Malathion is a short-lived insecticide with no known environmental "food-chain" effects. Surveys are planned for the spring of 1969 to determine if additional control will be required.

FOREST DISEASE AND INSECTS SPREAD

A forester studies a section of bark to identify the tree-killing insects.



A SUCCESSFUL PROGRAM OF LAND EXCHANGE

During 1968, the Region completed thirty-two land exchanges. The largest, from an acreage and value standpoint, was the Lehman-Simonson exchange in the Six Rivers National Forest. The United States received 26 separate parcels of private land, totaling 10,150 acres, with 10 million board feet of timber scattered over a 24 mile square area. Relinquished were six parcels totaling 2,420 acres, with 30 million board feet of timber, abutting the west boundary of the Forest in a three by five mile area.

This exchange will make possible a logical retraction of the west boundary of the Forest to exclude an area containing much private land. The consolidation has the added benefit of eliminating 66 miles of boundary between Federal and private land and simplifying management within the area.

In an additional exchange, some 400 acres of choice land with some fine virgin redwoods and with recreational potential was acquired along the Smith River. One exchange involved the relinquishment of $45,000 worth of standing timber and no land.

In the exchanges, land with potential for recreation, greenbelts, and wilderness, along with other lands of National Forest character, were acquired for the public. A number of parcels were relinquished near expanding communities where they were being surrounded by urban development.

SAN GABRIEL WILDERNESS ESTABLISHED

Established in May, the San Gabriel Wilderness in the Angeles National Forest became the 15th National Forest Wilderness in California. Most of the area was formerly the Devils Canyon-Bear Canyon Primitive Area of 34,807 acres. When it became a Wilderness, 1,330 acres were added, and it now includes Twin Peaks and the south slope of Mt. Waterman — the habitat of the protected Nelson bighorn sheep.

The San Gabriel is the second Wilderness to be established under the 1964 Wilderness Act. The first was the San Rafael Wilderness, established last year in the Los Padres National Forest.

A portion of the new San Gabriel Wilderness.

FOREST SERVICE TO ESTABLISH NEW RESEARCH AREAS

A system of Research Natural Areas in the National Forests of California, now totaling 9,300 acres, is to be enlarged soon. Research Natural Areas are set aside for scientific observation and ecological study, and are maintained in as close to a natural state as possible. These lands provide scientists with "control" areas from which to gauge human impact on similar natural resources elsewhere. They differ from Wilderness, or other special areas, in that recreational use is not encouraged.

The first task will be to prepare a list of the timber, grass, and brush types which should be preserved in the Research Natural Areas. Later, recommendations will be made for the establishment of individual areas having these vegetative types.

An important consideration is coordinating the Forest Service program with similar programs of State and other Federal agencies, as well as with other Forest Service Regions. The objective is to designate an area on public land for each major vegetative type, regardless of the agency involved.

The first Research Natural Area in California was established by the Forest Service in the Inyo National Forest in 1932. Here the Jeffrey pine timber type is preserved. Other areas have been established since to preserve outstanding examples of the bristlecone pines, the Digger pine-oak type, whitebark and lodgepole pine, and western juniper.

In addition to the five Forest Service areas, others have been established by the National Park Service, and one by the Nature Conservancy. The Bureau of Land Management also has plans to designate Natural Areas in the State.

"ATLASES" COMPLETED FOR THREE NATIONAL FORESTS

During 1968 the Forest Service completed land status atlases for the Klamath, Modoc, and the Mendocino National Forests. The purpose of an atlas is to record land ownership and other data applicable to the administration of National Forest lands. Similar atlases are currently being assembled for the balance of the National Forests in California. Typical entries indicate how specific lands attained National Forest status. Included are reservations or outstanding rights that may affect uses of the lands, and the government's interest in certain related private lands as well as interests others hold in National Forest lands. Each atlas will indicate by map and tabular record every right-of-way acquired reserved, or granted, and the location, significance and status of each.

IMPORTANT LANDS ACQUIRED

Last year, the Forest Service in California acquired 25 individual tracts of land totaling 2,100 acres at a cost of $714,712. Use for these lands will vary from campground expansions to water recreation sites, zones for protection of scenic views, and roadside turnout areas. The sites are located in various parts of California from Whiskeytown-Shasta-Trinity National Recreation Area to the Laguna Recreation Area in the Cleveland National Forest. Money allocated for these purchases was derived from the sale of the Golden Eagle Passports, taxes from motorboat fuel, sale of surplus government property and receipts from the outer continental shelf lands.

EMIGRANT BASIN PRIMITIVE AREA STUDIED AS POTENTIAL WILDERNESS

The results of a Forest Service study of the Emigrant Basin Primitive Area in the Stanislaus National Forest for suitability as a Wilderness will be released in the spring of 1969, and will contain recommendations for classifying the area as Wilderness.

The Primitive Area extends north of Yosemite National Park for 10 miles along the west side of the Sierra Nevada Mountains, and is administered by the Stanislaus National Forest.

Scenic and outdoor recreational values of this high mountain country were recognized by the Forest Service nearly 40 years ago. And following exploration and study, the area was classified as a Primitive Area in 1931, and has been managed and protected by the Forest Service for 37 years in its natural, undeveloped state.

Named for the California gold-seeking emigrants who crossed the Sierras in the early days, riding and hiking trails connect more than 100 lakes scattered throughout this rocky terrain, and make it a very popular scenic and hiking area. It can be reached from the west via U.S. Highway 99 and State Highway 108, and from the east via U.S. Highway 395 and State Highway 108.

Under the provisions of the Wilderness Act, passed by Congress in 1964, the Forest Service is required to study all Primitive Areas and conduct public hearings to determine their suitability for Wilderness classification.

Looking across the Sonora Pass Road, to a high mountain ridge rising within the Emigrant Basin Primitive Area.

HELP PROVIDED OWNERS OF SMALL FOREST LANDS

Under a Cooperative Forest Management Program of the Forest Service and State Foresters, eleven Service Foresters assisted forest land owners in placing over half a million acres of land under improved management this year. Financial support, training, and guidance for these Service Foresters is shared by the California Region of the Forest Service and the State Foresters of California and Hawaii.

This advice and assistance, given private land owners by the Service Foresters, included over 3,000 acres of harvesting, more than 2,500 acres of stand improvement, 7,000 acres of planting or seeding, and some 200 detailed recommendations for improved grazing, recreational developments, and wildlife management. Through this technical advice, the owners increased their gross financial returns by nearly $1,400,000.

A typical example is this case, one of the 2,600 handled by them during 1968: Two medical partners bought 40 acres of forest property in the Santa Cruz Mountains. The tract had been logged many years ago and had second-growth redwood mixed with Douglas-fir and hardwoods. The owners needed advice on how to manage it.

They were referred to the Service Forester of the California Division of Forestry at Monterey who went over their forest land with them and pointed out the best way to develop it for their particular needs.

The Service Forester soon found these owners were typical of many young professionals of today. They were interested primarily in recreation and esthetics, and were sure that "an axe would never ring in their forest." However, after several hours of clambering over fallen trees, old slash, and poison oak and brush, they listened to the benefits that a light logging operation could bring. They were shown how properly laid out logging roads could become permanent access roads and riding trails, and how judicious thinning in dense clumps of young redwood would let in more light and also bring in money to finance improvements. And they were told how to contact the Soil Conservation Service to get help in developing two fine springs noted on the tour.

These two men soon came to realize that professional help was essential in solving the many problems — they hadn't even recognized — in the development of their land.

Foresters in Hawaii inspect a grove of 30-year-old robusta eucalyptus. This tree grows rapidly here and produces a large volume of usable wood. Photo: Norman K. Carlson

TECHNICAL ACTION PANEL MEETINGS CAP ACTIVE SEASON

The Forest Service — cooperating with U.S. Department of Agriculture and State and local agencies — has been active in developing the "Town and Country USA" program through a series of Regional Technical Action Panel training meetings. Forest Service rangers serve on 34 county Technical Action Panels in California which are formed of county, State, and Federal agency representatives. To help local groups make their rural areas better places in which to live, these panels provide direct technical help when requested, and also bring the expertise of other agencies to bear through referrals to appropriate sources of assistance.

FORESTS BENEFIT FROM JOB CORPS PROGRAM

The work of youths in the five Job Corps Civilian Conservation Centers administered by the Forest Service resulted in hundreds of thousands of dollars worth of improvements to National Forest facilities this year. Most of these improvements are an asset to public enjoyment of the Forests. None could have been accomplished through regular funding procedures.

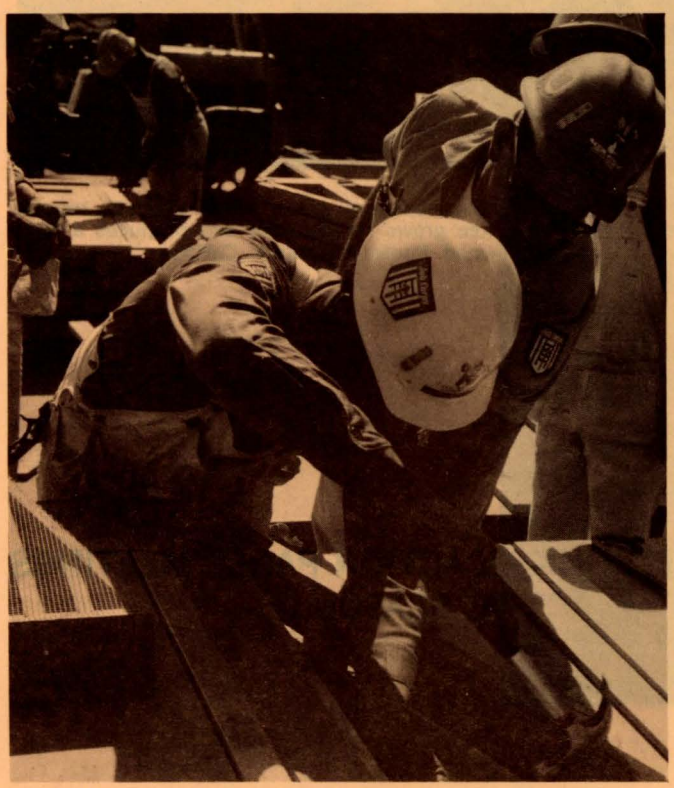
During the year, campgrounds worth $555,000 were developed, and building construction and reconstruction projects produced $250,000 worth of improvements. Water and sewer systems added a value of $170,000 in construction, and other projects added $22,000. In addition, 154 man months were spent on fire suppression.

Formerly called Job Corps Centers, these centers were officially renamed Job Corps Civilian Conservation Centers. The title is reminiscent of the "C.C.C." program of the thirties which was held in high regard. At the new C.C.C., the corpsmen work half the time, and attend school the other half.

NEW JOB CORPS CARPENTRY COURSE LEADS TO APPRENTICESHIP

A new specialized program in carpentry training, sponsored by the United Brotherhood of Carpenters and Joiners of America, was conducted at Five Mile Job Corps Civilian Conservation Center near Sonora. Similar to programs in other parts of the country, young men receiving this training will be placed by the union as apprentices upon satisfactory completion of the one-year program.

The major work project of the Five Mile carpentry program during the year was the start of construction of a modern Ranger Station office building at Mi-Wok Village in the Stanislaus National Forest. The 4,100-square foot office building has a novel design with poles that serve as a foundation to support both the floor and roof. The project provided an excellent opportunity for these young men to learn a variety of carpentry skills.



An instructor from the United Brotherhood of Carpenters directs a Job Corpsman in prefabricating a section of a Forest Service building.

FOREST SERVICE REQUIRES MANY SKILLS TO SERVE PUBLIC

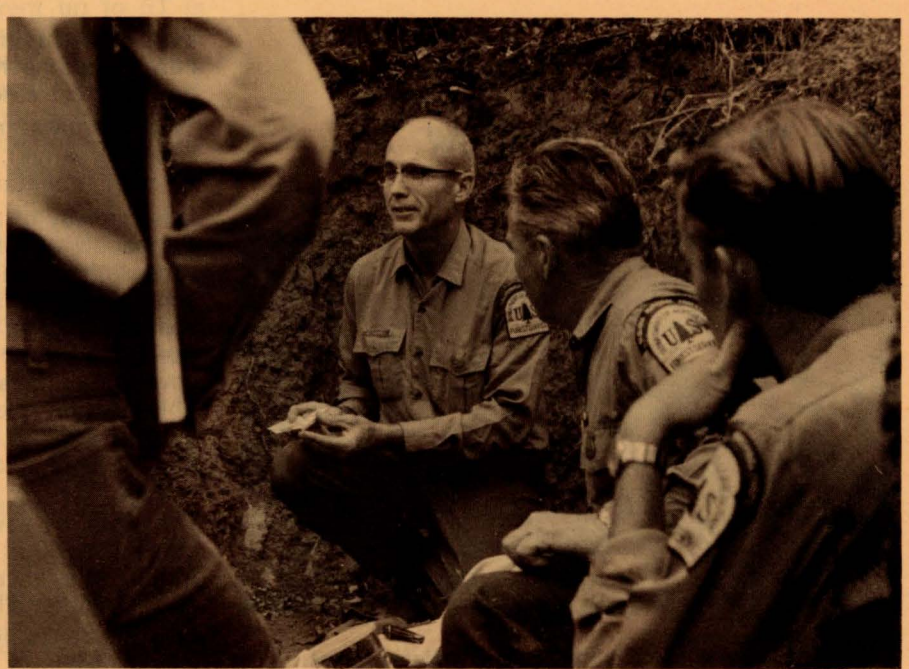
With the intensification of Multiple Use Management, and increasing demands for various uses of the National Forests, employees with new and varied skills have been acquired to develop and manage the natural resources. Too, the mission of the Forest Service has been enlarged to include many new programs.

Today more than 60 different professional, technical, and non-technical skills are represented by personnel employed in the California Region. In 1968, employees trained in some 16 professions were recruited from colleges and other sources. In addition to the normal employment of foresters, engineers, and business managers, these professionals included landscape architects, hydrologists, soil scientists, wildlife biologists, range conservationists, and geologists.

Formalized training in these special skills continues during employment with the Forest Service. More than 50 region-wide training courses were conducted this year to develop further the skills of employees and to keep them current with developments in their fields. In addition, four employees recently completed a year's graduate study under the Government Employee Training Act in systematic analysis, economics, program planning and budgeting systems.

This training has paid off. In addition to performing their jobs better, well-trained employees work more safely and costly accidents are reduced. As a result, the accident rate has shown a consistent decline over the past several years, and the California Region received an award for accident prevention.

During the year, a positive program of equal employment opportunity was emphasized. Members of minority groups are represented in increasing numbers each year, and women employees in greater numbers are found in both the professional and technical ranks.



One of the many specialists employed, a soil scientist explains how to recognize "horizons" in an exposed soil profile in the Sequoia National Forest.

FORAGE USE HIGH

Rangelands within the National Forests continue to make a significant contribution to the California range livestock industry. In 1968, some 100,000 cattle grazed more than a third of a million animal months, while 75,000 sheep used nearly a quarter million animal months of forage in the National Forests of California. Good forage was also available in most areas for saddle and pack animals used by visitors to the National Forests this year.

DIKES IMPROVE ERODED AREAS

With a stretch of the imagination, some portions of the Modoc National Forest in northern California could be mistaken for areas of the Low Countries. But in this case, the dikes which are being built are to hold water in, rather than to keep it out. The purpose of this diking program is to catch spring run-off water behind the dikes to help heal eroding flat lands and create wet meadows. The ponds behind the dams are planted with bulrushes and grass to benefit waterfowl. These structures also improve the habitat for deer, antelope, and other wildlife, as well as for livestock by providing green forage and drinking water. In addition, goose nesting sites have been constructed at Spaulding Reservoir and at Beeler Reservoir to encourage nesting by Canada geese. Observations last spring indicated the geese occupied all these nesting sites.

The Lassen National Forest also has started a waterfowl habitat improvement program. Nineteen goose nesting platforms were constructed last year at Big Jacks Lake and at other reservoirs.

These projects are only a small part of the Region's overall wildlife habitat improvement program. A total of 10,164 acres were treated on National Forests in California during 1968 to improve habitat. This included over 6,400 acres of seeding and planting, 1,500 acres of crushing and spraying to produce browse sprouts and seedlings, and 1,500 acres of permanent wildlife openings. Many small water developments were also installed to provide a better distribution of drinking water for wildlife on the National Forests.

HOW TO SAVE A MEADOW

Ever thought of "saving a mountain meadow"? The Forest Service has, and during the year twelve meadows were treated to prevent their disappearance.

Wet meadows are important to wildlife (particularly as fawn nurseries), for livestock grazing, and as a source of clear mountain streams.

Controlling lodgepole pine in the Sequoia National Forest.

It is the way of nature for trees to slowly close around a meadow and for it to gradually fill in and dry. The process has gone on for many thousands of years. But some of man's abuses of the land in past years have speeded up this process. A poorly located trail or misuse by livestock may have damaged the delicate plant cover on a meadow and caused accelerated erosion. This erosion rapidly lowers the water level and dries out the meadow. These and other abuses have left bare ground, and allowed low value lodgepole pine to encroach.

The work of saving a meadow entails correcting the erosion, or other cause of rapid draining, and then controlling the encroachment of the trees. Much of the work, incidentally, was accomplished with help from private individuals and organizations including the Boy Scouts.

The Equipment Development Center of the Forest Service completed work on a production model of the "Riffle-Sifter," designed to clean fish spawning gravel. This self-propelled apparatus travels through shallow stream riffles where salmonid fishes (salmon, steelhead and trout) spawn, to loosen the streambottom material and remove fine particles. This helps successful hatching of the fish eggs. Prior to the spawning season, the machine "plows" the gravel with steel teeth, sprays it with high-velocity jets of water, and vacuums up the mud which is discharged beyond the streambank.

The machine was originally developed by Alaska Region of the Forest Service, and was designed for Alaskan salmon streams. Recently it has been a joint venture of the Forest Service and the Clark Equipment Company of Michigan.

The device has wide application possibilities throughout the West, and possibly elsewhere. The 1968 final field test runs were made in California in cooperation with the California Department of Fish and Game. The Mokelumne River Artificial Spawning Channel provided a fine test site under controlled conditions.

"RIFFLE-SIFTER" AIDS FISH REPRODUCTION

The Riffle-Sifter undergoing testing.

The fourth annual California condor count in October yielded a tally of 52 separate birds. This was the highest count since the experimental survey started three years ago. More than 130 observers — ranchers, members of conservation groups, and workers from State and Federal agencies — took part in the two-day survey.

The spotters, manning 65 stations within the condor range, made a total of 183 observations. At the central station in Bakersfield, these observations were correlated and mapped by age class, time of observation and direction of flight. Correlation of the findings permit elimination of duplicate sightings.

The first condor survey in 1965 resulted in a tally of 38 separate individuals. The count went up to 51 in 1966, and dropped to 46 last year. No attempt has been made to determine the total population of condors on the basis of surveys, but experts point out the results of the survey indicate the number of condors is not diminishing. However, the low percentage of young birds in the 1968 observations is not encouraging.

CONDORS HOLDING THEIR OWN

Condors do not feed on live game. The condor is a scavenger, feeding on the carcasses of cattle, sheep, deer, squirrels, and other wildlife, often flying many miles searching for dead animals. Condors are known to range throughout most of the Los Padres National Forest and over the Tehachapi Mountains and southern Sierras.

The California condor has the widest wingspread of any North American land bird with an average span of nine feet (some reach eleven).

The condor existed alongside man in the Stone Age. Once found throughout the West Coast and much of the southern half of the United States and northern Mexico, the range of this great bird has diminished, along with its numbers, until there is a real danger that through an accident, or man's indifference, this majestic bird could be eliminated forever.

FIRE SEASON HAS EARLY START – TOTAL ABOVE NORMAL

The ominous smoke cloud of brushfire in southern California.

The spring of 1968 was abnormally hot and dry in the mountains, and as a result the fire season started early. With fire weather severity running 190 percent of normal in southern California during June, the Region suffered 300 man-caused fires. It was also in June that the devastating Liebre Fire, on the Angeles Forest, burned over 50,000 acres of critical watershed.

In July, cooler weather with a few mountain showers brought the fire weather severity closer to normal with average fire activity.

Then in August, the Canyon Fire on the Angeles burned 20,200 acres of valuable National Forest and private watershed.

When the vegetation is burned from these watersheds, an average rainfall can cause massive erosion and floods of water or mud. A heavy rainfall can be disastrous. For this reason, the burned area was seeded to grass in October and November. Other burned areas received similar treatment.

The fire season ended from the Sierra National Forest northward on October 14, 1968. While the fall fire weather in the south was characterized by several periods of Santa Ana winds, there were no damaging fires during these periods. The four southern forests closed their fire season on December 20, 1968.

Season's results up to December 31 showed 1,113 man-caused fires compared to the five-year average of 849. Lightning fires totaled 919 against the five-year average of 1,014. Acreage burned this year totaled 89,682 with a five-year average of 61,071 burned acres. Ninety-one percent of the acreage burned was on the four southern forests.

A tremendous area of watershed vegetation was destroyed by the Liebre Fire.

"HOT SHOTS" ARE CORE OF ANGELES FIREFIGHTERS

The 1968 fire season was a particularly tense, active, demanding one in the National Forests in southern California. It tested the stamina of all fire control personnel. The Angeles Forest alone logged 99 statistical fires which burned some 80,000 acres.

Ready to answer a fire call on a moment's notice were the Angeles Forest's Hotshot crews, one hundred strong, who plunged into the thick of things time and time again. These men, sectioned into four crews located at strategic spots throughout the Forest, had the job of initial attack on a forest fire and of aiding in final control of the numerous blazes that occurred almost continuously throughout the season.

Still relatively inexperienced, the crews responded to the early season Reservoir and Liebre Fires. These fires burned 52,459 acres and united a group of individual crewmen into a strong team with a single purpose. As the season progressed, team effort, know-how, and determination were strong enough to successfully combat such fires as the Strawberry Peak, Canyon, Lytle Creek, Poppet, and Limerock.

These Angeles crews drew some of the most difficult of fire assignments. One of the worst was the Canyon Fire. Day after day, the Hotshots pushed into the head of this tragic fire. Time and again, their control attempts were stymied. The weather was severe, and the terrain precipitous. Only through perseverance and concentrated effort did these Hotshot crews finally win out.

Basically, a Hotshot's job is hot, dirty, and strenuous. In the initial phase of a fire, a crew will sometimes work on the fireline for as many as 20 hours without a break. They return from the line hot, grimy, and exhausted from wielding their axes and shovels — often in temperatures exceeding 100 degrees. They shovel in the chow at fire camp, enjoy the luxury of a few hours sleep, and then return to the line, facing perhaps another long shift fighting fire, thirst, heat, and exhaustion.

Who becomes a Hotshot crewman? For the most part, the crews are comprised of youths 18 to 20 years old who are students interested in forestry. Most share a common interest in outdoor sports, ranging from football and weightlifting to motorcycle racing and skydiving. About 20 percent of those initially hired find the rigors of the life too strenuous and quit before the season's end. Others return to the Hotshot ranks for a second or even a third season.

What makes a Hotshot crewman? To build the Hotshots into the hardened team they must become, a five-point training program is instituted. Orientation to the forest environment and work organization, fireline safety, fire behavior, physical fitness, and use of fireline hand tools comprise this program. Training continues throughout the fire season. In a season like the one just past, classroom training necessarily took second place to the suppression experience gained by these crews in on-the-job fire situations.

When not involved in an actual fire suppression effort, these crews work on projects on the National Forest. These include such tasks as station maintenance, tool and equipment maintenance, hazard reduction, trail and fuelbreak construction.

The work of extinguishing every spark in dry brush is back-breaking and hot. Photo: PACE Publications

Living together in a barracks, the crews work an eight-hour day and then are put on a seven-hour standby, during which time they are not allowed to leave their stations. Often when the fire danger is high, they must forfeit their days off to remain on standby. Their salaries are not high, yet the job holds an element of adventure and glamour for many young men. The Angeles yearly receives many times more applications for these jobs than there are positions to fill.

The "air and space" age has brought with it exotic and effective means of fighting fire: the air tanker, the helitanker, and other advanced fire equipment. Vital, however, is the role played by the "man on the ground." The Hotshot crews, with their hand tools, and their persevering spirit still bear the burden and the ultimate responsibility of winning the battle against fire. The Forest Service is proud of its firefighting "army."

NEW RANGER STATION — VISITOR CENTER OPEN AT MAMMOTH

The new Mammoth Ranger Station and Visitor Center was completed this year, and is now "open for business" in the Inyo National Forest. The building, designed by the Forest Service, provides offices for the district ranger and staff — the management team for this portion of the National Forest. In addition, the building contains a 1,150 square-foot reception area with a free-standing graphic display illustrating National Forest features, an information booth, and a 150-seat auditorium for audio-visual projections and visitor programs.

The approach and entrance to the Mammoth Visitor Center.

COMPUTERS AID RESOURCE MANAGERS

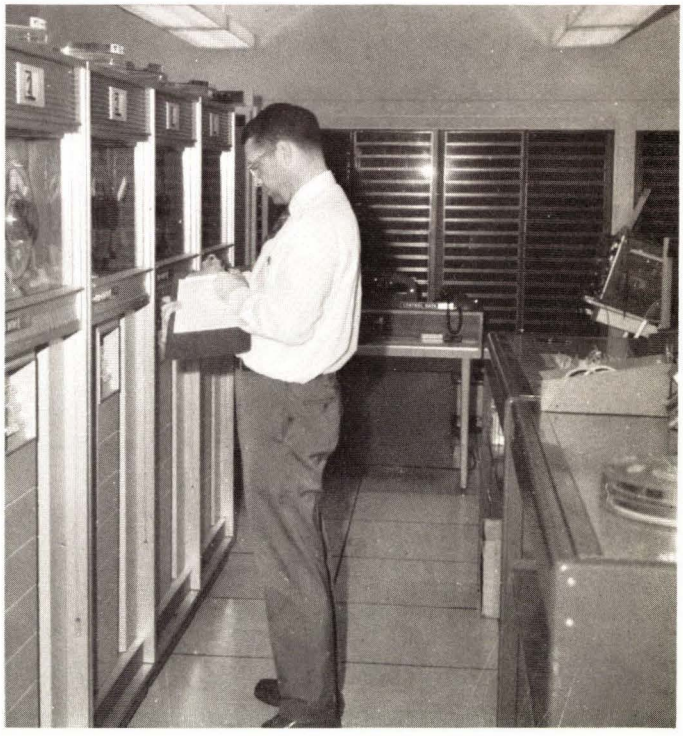
Thanks to modern computers, it may now be possible to judge the end results of management decisions before the decisions are made. This would lead to more efficient use of land and dollars.

The Pacific Southwest Experiment Station, with the aid of the Eldorado National Forest and the Regional Office of the Forest Service, is testing two computer-based resource inventory and allocation systems. Collectively, these systems are the Wildland Resource Information System and Resource Allocation Model, less formally known as WRIS-RAM.

WRIS-RAM, if proven successful, will give the resource manager the opportunity to test a number of different management concepts to determine which will produce maximum benefits at minimum cost. By using the computer systems, the results will be shown at five and ten-year intervals, as far into the future as 200 years. Contrary to previous methods, which began with an inventory of all physical features on the unit, information already available is utilized for WRIS-RAM. This information — on such things as timber growth rates, water yield figures, siltation rates, and grazing capacities — is coded for computer use and entered into the resource information system along with current estimates of error.

Using this available information on basic input data, the computer designs an efficient field inventory sampling system for collecting the additional data needed in the management decision-making process. Upon completion of the field inventory, the up-dated information is fed into the computer for the next generation of programs designed to retrieve and utilize the information.

One of the more significant outputs from WRIS-RAM will be an overlay map, printed by computer equipment, that will show the physical resources of the management unit. The overlay, which can be printed in a variety of map scales, will give the resource manager a graphic and accurate picture of the resources he has to manage. The overlay map and the supporting statistical data form the nucleus of the systems. With these tools, the resource manager can evaluate different management systems that will help him develop more efficient and productive management programs for his resource unit.



A modern automatic data processing unit is located in the Regional Office in San Francisco.

GPO 977-316

Remember–
only YOU can prevent forest fires!